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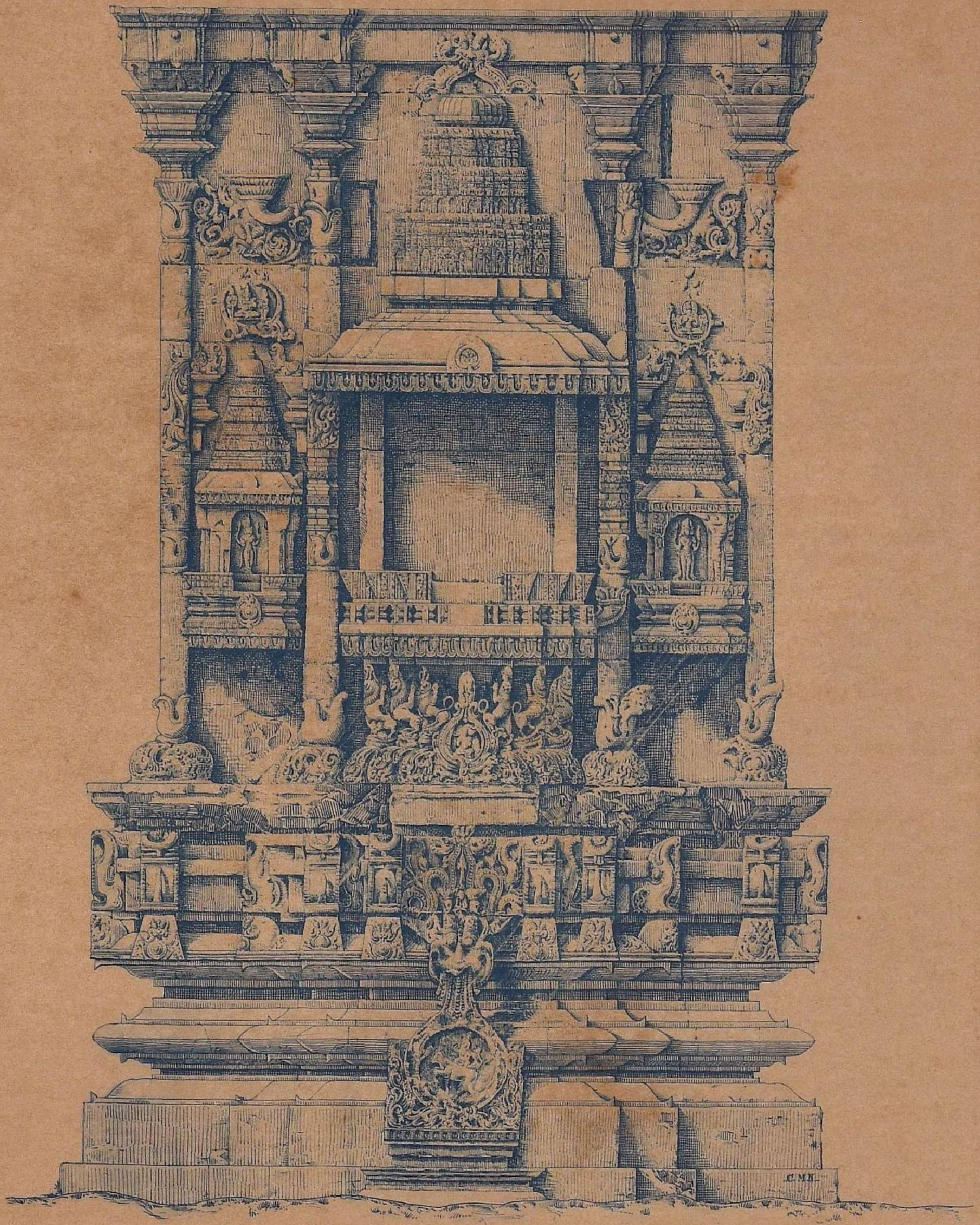
C.M.N.

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EDITORIAL NOTES.

A STARTLING discovery is announced from Würzberg University. It is that Professor Röntgen has discovered a new action of light, or rather of its invisible rays. The light emitted by a Crookes's vacuum tube, when an electric current is passing through it, was found to be capable of photographing objects through organic substances like wood or flesh. Metals and bones are opaque to these rays of light, and it is said that test experiments have conclusively proved that photographs can be taken of metals hidden in wooden receptacles, without even drawing the shutter of the dark slide. Bones contained within the human hand have been photographed in this way, and prints from negatives of human hands with rings on the fingers, but showing no flesh, have been secured. It is difficult to foretell the possibilities arising from such a discovery, and already claims are announced of unlimited advantages to the surgeon and the physician who would be able to peep into things, which are otherwise inaccessible without much discomfort to the patient. Naturally every one must feel some hesitation in accepting statements of this kind in their entirety, until further proof becomes available.

WE have been requested to give publicity to the movement which has been inaugurated at home to raise a suitable memorial to the late J. Traill Taylor, Esq. It is rightly felt that the services which he rendered to photography deserve to be recorded in a permanent way, and with this object in view a well attended meeting was held in London last month, at which the President of the Royal Photographic Society took the chair. It was resolved that subscriptions should be invited from those interested in photography to found a memorial, and a special committee was appointed to report upon the most advantageous method of carrying the idea into effect.

Considering the short time that the movement has been afoot, a decent total has already been reached, and it has been suggested that funds should be devoted to founding a lectureship. The idea has been welcomed by the bulk of photographers. It will probably be of the same nature as the Gilchrist and other series of lectures on photographic matters, given in England to photographic societies and the general public. The dissemination of photographic knowledge is felt to be a great need at the present day, and even men of science know very little about it. Courses of lectures, given and published, cannot fail to help forward photographic work and its applications. To further such a desirable object, from which all photographers cannot fail to reap much benefit, subscriptions are invited; our Honorary Secretary will be glad to receive and to forward them. *The Amateur Photographer* gave the following brief account of Mr. Taylor's life and work:—

"Born in the Orkneys about sixty-five years ago, Mr. Traill Taylor never quite lost his native burr and accent. He set up for himself in Edinburgh as an optician, and very soon entered heart and soul into photography,

practising very early daguerreotype, and, whilst there, was one of the founders of the Edinburgh Photographic Society. In 1864 he was appointed Editor of the *British Journal of Photography*, a post which he held with honour to himself and the journal till 1880, when he took up the Editorship of the *Photographic Times* of New York, and whilst in this position, he began orange-growing on an estate which he had purchased in Florida and which was one of the reasons for his visit, which has thus so fatally ended. In 1885 he returned to England and resumed the editorial reins of the *British Journal*, which he so ably conducted till his trip to America. During the whole of his editorship, we believe, he never made an enemy; his knowledge of the past history in all branches of photography was unparallelled. He was the Editor of 'Hardwick's Photographic Chemistry,' a member of the Council and Fellow of the Royal Photographic Society, honorary member of the Camera Club, the Photographic Club, the London and Provincial Photographic Association, and the Edinburgh Photographic Society, and corresponding member of the Imperial Polytechnic Society of Russia, etc., etc., and author of 'The Optics of Photography and Photographic Lenses.'"

THE double number of the *Practical Photographer*, for January 1896, has come to hand with special Flash-light Supplement. It is full of information on flash-light work, and is amply illustrated with examples of results obtained in this branch of photography, a study of which cannot fail to infuse enthusiasm into the least interested. The notes and formulæ too afford an amount of information, which would materially help the practical worker.

MR. DUNSTERVILLE stated, at the last meeting, that he had been using formalin recently for hardening the gelatine films of transparency plates, the solution being one part of formalin to three parts of water. He had found that an immersion of 20 to 30 seconds had made the film quite hard and leathery. It could be torn, but rubbing had no effect whatever on it.

Some stereo. transparencies, which had been formalined, were found to require slight intensification. They were, when dry, put straight into the ordinary mercury solution (1 ounce to 50 of water). They at once whitened evenly all over, and after washing were intensified by a solution of metol (metol $1\frac{1}{2}$ grains, sodium sulphite 16 grains, water 1 ounce). The blackening process took place evenly just as on a non-hardened plate. A similar trial was made with Farmer's Reducing Solution, the result being that the image gradually disappeared until a mere trace of the original vigorous image was visible.

To satisfy himself that the formalin solution had acted properly, these intensified and reduced plates were immersed in hot-water (about 150° Fahr.), but no softening took place as would have happened with films not hardened in this way, and it was found that the film could be rubbed hard without any effect, and could only be pulled off as a tough skin.

It would therefore appear that in our hot season, which is approaching, the use of formalin will be of considerable assistance to those of us who have to work at photography on the plains, for after development (or perhaps immediately after fixing and very slight washing) an immersion in the formalin solution will enable our plates to go safely through a thorough washing and they can then be dried even in the sun if desirable!

A NEW medium for illumination of dark rooms is picrated gelatin. A screen can be prepared by fixing an unexposed plate in hypo, washing it, and then staining the gelatin film by immersion of the plate for a few minutes in a solution of picrate of potassium. On exposure to day-light the film will darken, and when dry, it should be varnished. Light filtered through such a screen is said to be safer than the best red stained glass available. Mr. W. K. Burton has been experimenting with photographic plates coated with films of gelatin containing ammonium picrate. The plates darkened on exposure to sunlight and it was found possible to make prints from negatives, the portion of picrated gelatin affected by light being found to be insoluble in boiling water. When an exposed plate was washed, the picrate from the unchanged parts dissolved out and the image was seen in relief.

The sensitiveness of the picrated film however seems to be very much less than chromated gelatin, since about one-hundred-and-fifty hours' exposure to bright sunshine was required to obtain a satisfactory print; hence no very important results are likely to follow immediately. Another use for such prepared films was however found in their employment as screens in ortho-chromatic work, and it is said that they gave better results than any other single colour screen.

OUR illustration is a cyanotype print produced at the Madras Survey Office, and it is an example of the perfect way in which blue

prints can be made upon a clear white ground. For ordinary line work, when time is an object, there is almost no other process to equal it for effectiveness and cheapness. We have seen some very fine examples of the work turned out by this process at the local Survey Office, under Mr. J. H. Cook, and the Survey maps which are printed in blue are well known, in this presidency at least, for their neatness. A series of prints, which were sent to the Imperial Institute Exhibition of Photography as examples of photography as applied to cartography, were very much admired. Mr. Cook has furnished a brief note of the process, and members who wish to try it will find all the information which they need by a reference to the article published further on.

The picture represents a specimen of Châlukyan architecture and shows a part of the north wall of Katteswaran Temple, Hadagally, in the Bellary district.

THE CARE OF LENSES.

By C. Michie Smith, Esq., B. Sc., F.R.S.E.

[*Read before the Society.*]

I am frequently asked to examine lenses and advise their owners what they ought to do with them, and the experience I have gained in such work leads me to think that there are not a few members of the society who would be glad of some hints on the best way of taking care of their lenses. Lens owners may be roughly divided into two classes—those who are almost afraid to look at their lenses for fear of spoiling them, and those who treat them as if they were sheets of window glass! Of the two classes, the former is, of course, to be preferred, but as in most other things there is a golden mean between these two extremes.

Lenses are, indeed, very delicate instruments and ought to be handled with extreme care, for it is surprising how easily they can be injured, especially by scratches. I have in my possession a lens which must have originally cost at least £ 30, but which is now practically useless on account of scratches which have apparently been made by a former owner spinning the glass on its convex surface! I have seen other lenses which have been ruined in the same way, and though I do not suppose that any member of this society would be guilty of such barbarity, yet I fear there are some who are almost hopelessly careless as to the cloth they use for dusting a lens. I have known people who thought they were absolutely beyond fear of reproach in this matter because they always used a piece of chamois leather, but yet their lenses showed many small scratches. The reason of this is easily enough seen, for it is not the chamois leather that made the scratches but some dust that was adhering to it. Chamois leather is a very good thing for cleaning glasses if it is itself perfectly free from grit, but in this country that can be secured only by keeping it in an accurately stoppered bottle. Perhaps it may not be superfluous to mention that chamois leather can be washed with perfect safety, if the washing is done in an abundance of cold water. If it is at all hard after drying, this can be cured by rubbing it vigorously.

But while clean chamois leather, quite free from dust, is probably the best thing for wiping a lens, yet the risk of its having some grit adhering to it is so great that I almost prefer to use an old soft handkerchief. This holds dust less, and if old enough is nearly as good as the leather. Whatever cloth is used it is well before rubbing the lens to make sure that there is no dust on the lens. If there is dust, it must first be removed either with a soft brush or by gentle "flicking" with the cloth.

If a lens has been kept covered—as all lenses ought to be—very gentle rubbing will generally be sufficient to clean it; but if it has been left open, it may have got covered with fly blows or other stains which are more difficult to remove. In such a case, by far the best advice which I can give is that given some time ago by Brashear to the Royal Astronomical Society—wash your lens with soap and water. This is much the best and safest way of cleaning a dirty lens. Where the lens is a large one, considerable care has to be taken during the washing; but with lenses of the size commonly used by photographers there is no difficulty at all. The lens can be held in the hand during the whole process, so that there is no risk of scratching it by grit coming between it and the vessel in which it is lying as is the case with large lenses. Of course before washing a lens it should, if possible, be taken out of its frame, and in the case of a compound lens it is necessary to note carefully how the two lenses fit together, since definition may be ruined by reversing one of the lenses of a combination. After washing, the lenses must be carefully dried with a soft cloth before they are put together again, for it is very hurtful to have moisture between two lenses.

It is not uncommon in this country to find a lens covered with a thin partially opaque film. This film may be of two different kinds. If formed on a lead glass it may be due to lead oxide, and in that case it can be removed by treating it with nitric acid. This treatment is perfectly safe so far as the lens is concerned, but the operator must remember that his fingers are not equally proof against the action of the acid. If nitric acid does not remove the fog, the case is hopeless so far as home treatment is concerned, for the only cure is re-polishing, and few amateurs can attempt that with any hope of success.

When lenses are cemented together it is not uncommon for the cement to become affected and to cause a partial opacity. This, however, is easily cured. The lens should be gently heated—most safely in warm water—till the cement melts and the two halves of the lens can be separated. They should then be cleaned with turpentine, washed, and dried. A little Canada balsam must then be placed in the concave lens which is heated till the balsam is quite melted. After this the convex lens is slipped on in such a way as to drive out all air bubbles, and if the balsam is sufficiently fluid the lenses will come together driving out any excess of the balsam which can be wiped off. The lens should then be left till the cement hardens when any that has got to the outside can be easily removed with turpentine.

Dark spots and coloured rings are sometimes seen on lenses, which are due not to any fault in the lenses but to the two components being too tightly pressed together. These markings are what are known as Newton's rings and are produced by the interference of light. When these appear, it is best to slightly loosen the screw, pressing the lenses together.

A lens which has received a severe injury, such as a bad scratch or a chip, is not necessarily rendered useless. If the lens was originally a good one, it can be restored to usefulness by covering the injured part by an opaque screen, such as a piece of black paper, or by painting it over with black varnish. This will reduce the effective aperture of the lens, but will not otherwise interfere with its work.

There is, I am well aware, nothing that is novel in these hints, but I am encouraged by the Editors' remarks, in last number of the *Journal*, to think that lack of novelty is not necessarily fatal to their value, and if they save even one lens from being maltreated I will think that they have not been written in vain.

A NOTE ON CYANOTYPE PRINTING.

By J. H. Cook, Esq.

The formula used for sensitizing the paper (Saxe or Rive) is:—

A.	Potassium Ferricyanide ...	... $\frac{1}{4}$	ounce.
	Water	... 1	,,
B.	Ammonio-Citrate of Iron ...	... $\frac{1}{4}$	ounce.
	Water	... 1	,,

Make up these two solutions separately and mix them together.

Any smooth surface paper may be used, but 28 lbs. paper, as in the illustration, has been found from practice to answer best. The paper is smeared over with the above mixed solution in a dark room by means of a broad camel hair brush, and hung up to dry thoroughly. Paper so prepared is now sensitive to light.

It is then exposed under a negative until the printed out portions have changed to a yellowish green color. The length of exposure depends of course on the density of the negative, and the state of the weather. About 30 minutes is found sufficient for an ordinary negative in fine clear weather. When the exposure is completed, the paper should be well washed in water until all trace of color has disappeared from it, except from the print itself, which should stand out as a bright blue impression upon a pure white background.

If the paper be thick and the print over-exposed, dip it for a second or two in a weak solution of liquor ammoniæ ($\frac{1}{2}$ drachm Liquor Ammoniæ Fort. to 20 ounces of water) and again wash it thoroughly. It may then be put through a bath of dilute Hydrochloric Acid ($\frac{1}{2}$ drachm acid to 40 ounces of water), again washed well in water, and then dried. The finished prints may be varnished with a mixture of Canada balsam and turpentine, laid on with a broad brush, and they may then be considered quite permanent.

OUR HOME LETTER.

Photographic circles are discussing the new discovery of Dr. Röntgen, an Austrian Professor of Würzburg University. He was experimenting with Crookes's tubes, so frequently used to demonstrate the beauties of electricity, and which are essentially glass tubes from which all the air has been drawn out, and a small quantity of highly rarefied gas introduced. At each end is a platinum wire sealed in to serve as conductors for the electricity. Professor Röntgen was passing a current through one of these tubes, and it so happened that at the time his camera was standing by with the slide in it, and a plate in the slide. On developing this plate afterwards he was astonished to find an image of the bony structure of his hand on it, also of the rings on his fingers, but no outline of his flesh could be seen. From this he gathered, therefore, that although some of the rays known to proceed from a Crookes's tube in action are invisible to the eye of man, yet apparently the sensitive plate is affected by them. These rays also pass through wood, for his dark slide was closed at the time, but they cannot pass through metal, or bone. The discoverer was at first inclined to doubt the truth of the experiment, but his further investigations placed the matter beyond any doubt. The rays passed through a pack of cards placed between the tube and the dry plate. Moreover, since Röntgen's discovery, many other experimentalists in Britain and on the continent of Europe have shown beyond a doubt the truth of this action of light. The theory enunciated is that the rays from a Crookes's tube are invisible to the human eye, because they are thrown out in perfectly straight lines, and not as in the case of ordinary light or sound, in undulating waves. Assuming this to be the case, or that the rays form waves of great length, greater in fact than any wave length previously known to us, it is quite in accordance with the laws of physics to assume that they would pass through substances hitherto considered impervious to light. In these experiments a camera is not necessary. The plate must simply be protected from ordinary light by being enclosed in a dark slide. Medical science will probably benefit greatly by the discovery. Already a German doctor has succeeded in taking photographs of internal injuries in his patients, and it is thought that by these rays one can readily discover the position of a bullet without any probing. Professor Röntgen has been inundated with letters from all parts of the world, and has found it necessary to reply to them by a printed circular.

Further experiments are being made in regard to the optical projection of stereoscopic slides, on the principles laid down sometime ago by a French scientist, M. Ducos du Hauron. Mr. T. E. Freshwater, a member of the London and Provincial Photographic Club, has prepared stereoscopic lantern slides, the two images of which are projected on the screen respectively from a blue and red lantern. The two images do not exactly coincide, and to the naked eye appear simply a confused mass, but when spectacles having one glass blue and the other red are placed before the eyes, the images on the screen coalesce, and a vivid picture springs into view, so real, we are told, as almost to deceive the senses. Further developments may be expected before long, and it is quite possible that stereoscopic lantern exhibitions will become as popular as those with ordinary lantern slides are to-day.

Much interest is being taken at present in Acetylene Gas as an illuminant for various photographic purposes, such as lighting the studio, the enlarging lantern, the optical lantern, &c. Acetylene can be produced very readily and cheaply in the laboratory by a simple form of apparatus, but on the commercial scale it is not yet obtainable, the price of calcium carbide, from which substance it is made, being rather high. Some authorities state that the illuminating power of Acetylene is much greater than that of the incandescent gas light, whereas others maintain the supremacy of the latter. I believe, however, that in actual experiment Acetylene has been found capable of yielding a light of much greater candle power than Wellsbach Incandescent Burner.

A capital little book, and one that should be specially interesting to Indian readers, has just appeared. It is entitled "Photography and Architecture," and it is from the pen of E. Macdowell Cosgrave, M.D., Esq., a Dublin doctor who has studied architecture and archæology for some time past, and is strong in his advocacy of the

camera, as a useful adjunct to both subjects. In a country so rich in monuments of surpassing beauty, and of records of past civilizations rapidly crumbling away, there ought to be a large field of work open to photographers whose inclinations tend in that direction. If any who may read this letter have already devoted themselves to photographing architectural subjects, I should be exceedingly glad if they would write me, giving a rough list of subjects, and saying if they would be willing to supply prints in exchange for those of English scenery, or others.

The war craze is making the official photographers very busy with new Torpedo boats, and Men-of-War, on their trial trips. Let us hope, however, that the war craze will soon subside, and that our energies can be devoted to pleasanter and more profitable subjects.

MATTHEW SURFACE.

[Mr. Freshwaters' paper will be found among the Extracts. We have received a copy of "Photograpy and Architecture" from the publishers and have placed it in the Library. Members can have the same on apptication.—*Eds.*]

PROCEEDINGS OF THE SOCIETY.

Monthly Meeting, held at the Masonic Hall, Mount Road.

Friday, February 7th, 1896.

Mr. F. Dunsterville, President, *in the chair.*

The minutes of the previous meeting having been circulated to members, in the last issue of the journal, were taken as read and were confirmed.

The Honorary Secretary read the following letter:—

From the Editors of "The Photogram" and "The Process Photogram", to the Secretary, Madras Amateur Photographic Society, dated Farringdon Avenue, London, E.C., 15th January 1896.

DEAR SIR,—A strong effort is being made to raise a substantial testimonial to the memory of the late J. Traill Taylor, and I have been asked to write you requesting that you will take the position of local Honorary Secretary and Treasurer and do what you can to send a good contribution from your country to the General Fund.

Thanking you in anticipation,

Yours faithfully,

H. SNOWDEN WARD.

THE TRAILL TAYLOR MEMORIAL.

The Executive Committee, appointed at the meeting held on December 20 last, met for the first time on Wednesday, January 8, at the rooms of the Royal Photographic Society. Their first act was to exercise the power given them of adding to their number by inviting Mr. R. Child Bayley to join in their deliberations. After long and careful consideration of the various suggestions that have been made with regard to the form the memorial should take, it was decided unanimously that it should take the form of a lectureship in connection with photography, and that the lectures should be delivered in London, or in the provinces, according to circumstances, and as the controlling body for the time being might decide.

It was further resolved that the fund should be administered by a Committee to be elected triennially, and to consist of an equal number of London and of country members; the first Committee to be appointed by the General Committee of the fund.

The strongest desire was expressed by the Committee that it should be understood that it was their intention, as far as possible, to provide that the benefits of the fund should be made available for country photographers as well as London ones, and that country photographers should be fairly represented on the governing body.

Until some idea could be formed of the amount of money likely to be subscribed, it was, of course, impossible to discuss details of the application of the funds, but a hope and belief were expressed that the Committee would have a sum of not less than 500*l.* to deal with.

It was proposed by the President and seconded by Mr. W. H. Oakes that a sum of two guineas be forwarded to the Honorary Secretary of the Memorial Committee as a contribution from the Society, and this was carried unanimously.

PROPOSAL OF NEW MEMBERS.

Mr. J. L. Walker proposed and Mr. A. E. Lawson seconded—

Colour-Sergeant Stephen Blaker, Cheshire Regiment.

General Wardrop proposed and Mr. Michie Smith seconded—

A. E. Wardrop, Royal Artillery, The Mount.

Mr. Dunsterville proposed and Mr. Pinsent seconded—

Mr. G. L. P. Clarke, Adjutant, M.V.G., "The Palms," Mylapore.

Mr. Dunsterville proposed and the Honorary Secretary seconded—

Mr. William Maylor, District Engineer, Malabar.

And they were all duly elected to be members of the Society.

THE QUESTION BOX.

Is there any simple way of rendering a slow plate still slower?

By soaking the plate in a solution of bromide of potassium (about 3 grains to the ounce), or in a solution of bichromate of potassium. In the latter case the film will be stained yellow, but the colour must be washed out.

THE PICTURE SUBJECT FOR NEXT MONTH

will be "a Study of Cut Flowers, Ferns, &c."

MISCELLANEOUS EXHIBITS AND TECHNICAL WORK.

The President showed two stereoscopic transparencies which, after having been treated with formalin, (1) had been reduced until only a very faint image remained, (2) had been intensified to the required density.

In each case the film showed a wonderful toughness. He said that gelatine prints might be treated thus without any harm being effected, and probably with much advantage when the temperature is high.

He also showed two prints on "Sylvio" paper, toned in the ordinary carbonate of soda and gold bath. The toning was very even and the result admirable. The paper he said was very easily worked.

Mr. Dunsterville then put through the lantern some fifty of his well known slides which were much appreciated by all present. The lantern used was a lime-light one, belonging to Mr. Stevenson, the Manager of the Photographic Stores, who kindly lent and worked it on the occasion. The light was produced by means of a combination blow-through jet and showed great superiority over any as yet seen at the Society's meetings.

Mr. Michie Smith's interesting paper on the care of lenses will be found in another column. It contains many hints which members will be glad to have and to bear in mind.

The Honorary Secretary gave a demonstration of the development of three plates which had received the same exposure, one being developed with Eikonogen, another with Hydrokinone, and the third with a mixture of both these developers.

A gratuity of Rs. 15 was voted to the Secretary's writer for the first six months of the year 1895.

The meeting closed with a vote of thanks to Messrs. Dunsterville and Stevenson for their interesting exhibition.

HALF-YEARLY COMPETITION,

JANUARY 1896.

Subject:–A GROUP OF CATTLE.

No.	Title.	Exhibitor's Name.
	Large Pictures ($8\frac{1}{2}'' \times 6\frac{1}{2}''$ and upwards).	
1, 2, 3, 4	A GROUP OF CATTLE—(Nos. 2, 3 & 4 on P. O. P. and No. 1 on Opal.)	H. C. R. HARLEY.
5, 6, 7	A GROUP OF CATTLE—(Nos. 5 & 6 in Bromide, No. 7 on Opal.)	H. R. N. ELLISON.
	Small Pictures (below $8\frac{1}{2}'' \times 6\frac{1}{2}''$).	
1	A SACRIFICE TO THE DEAD ...	M. CLEMENTSON.
2	GROUP	W. S. ADAMS.
3	"AMRUT MAHAL" AND MYSORE CATTLE.	MISS SPEECHLY.
4, 5, 6, 7	GROUP	R. DER. NORMAN.
8	BLACK BUCK	H. R. N. ELLISON.
9	CATTLE	H. R. N. ELLISON.
10	PARADE No. 1	GENL. WARDROP.
11	„ „ 2	GENL. WARDROP.
12	ASSEMBLY	GENL. WARDROP.
13	DISMISSAL No. 1 ...	GENL. WARDROP.
14	„ „ 2 ...	GENL. WARDROP.
15	PUDUKOTTAH COLLEGE ...	E. MAENNIG, ESQ.
16	„ PUBLIC OFFICES.	E. MAENNIG, ESQ.
17	„ RAJAH'S ELEPHANTS.	E. MAENNIG, ESQ.
18	„ „ BULLOCKS.	E. MAENNIG, ESQ.
19	„ „ DEER ...	E. MAENNIG, ESQ.
20	„ „ RESIDENCY.	E. MAENNIG, ESQ.
21	FARM YARD	COL. STEVENSON.
22	"GOING HOME" ...	P. J. ROSE, ESQ.
23	"GOING TO GRAZE" ...	P. J. ROSE, ESQ.
24	"CROSSING A STREAM" ...	P. J. ROSE, ESQ.
	Enlargements.	
1	"MY PETS"	ELAYA RAJAH OF TRAVANCORE.
2	NATIVE CONVEYANCE WITH BULLOCKS.	R. DER. NORMAN.
3	GROUP OF CATTLE ...	H. C. R. HARLEY.
	Miscellaneous.	
1	CATTLE (On opal) ...	H. C. R. HARLEY.

Judges' Awards and Remarks.

On the whole the Judges are disappointed with the pictures sent in for this Half-yearly Competition. The subject, "A Group of Cattle", was selected, as it was thought that every member would be able, with the least possible trouble, to obtain such a subject, and that therefore the competition would be very great and the pictures sent in very good. The result is entirely unsatisfactory, the number of competitors is very small, and the prints for the most part are flat and inartistic.

In some of the prints, the subject, "Cattle", is altogether invisible, and in many others of only microscopic proportions. Many of the prints are badly over-printed, badly toned, badly cut out, and badly mounted. In one case the print is cut to a fanciful shape which utterly spoils the result.

In the class for pictures $8\frac{1}{2} \times 6\frac{1}{2}$ and upwards the Judges are unable to make any award at all. Under $6\frac{1}{2} \times 4\frac{3}{4}$, they give a Bronze Medal to General Wardrop's "Dismissal No. 1".

In the class for Enlargements, the Judges are glad to be able to report better results. His Highness the Elaya Rajah of Travancore (an experienced amateur) sends in a very good enlargement, apparently on Nikko paper, of a group of dogs with their mistress. To this the Judges award a Silver Medal. The picture is one that a first-class professional might be proud of turning out.

Mr. R. deR. Norman is awarded a Bronze Medal for a pretty group of cattle on a hill-side. The only faults to be found with this are a want of detail in the cattle, and slight over-developing of the foliage. A rather longer exposure would have obviated these faults and given a perfect result.

The Judges would much prefer competition prints to be sent in *unframed*, as it is difficult to inspect them when under glass.

The Judges do not consider it necessary on this occasion to offer remarks upon each individual print, and they hope that on the next occasion competitors will send in very much better pictures.

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CORRESPONDENCE.

A Beginner's Experiences.

To the Editor of the *Journal of the Amateur Photographic Society of Madras.*

Sir,—Having been informed that some practical notes on personal experience of photography would be acceptable to some of your readers, I offer this contribution on the understanding that you are at liberty to write across it "declined with thanks," should you deem it unsuitable to your columns.

I commenced my attempts with a quarter-plate camera of no particular make, and I succeeded in wasting a surprising amount of material, both chemicals, plates, and paper, in which I was encouraged by tempting advertisements setting off the advantages of different plates, papers, developers and toners. I persevered with indifferent success, but still I found I was improving in my manipulation and sometimes produced a presentable photograph.

I now thought I was sufficiently advanced to invest in a half-plate camera, and I purchased one with a single landscape lens. I soon found certain improvement, for with this I could work with more confidence, and obtain decent results. I then added to my kit a Rapid Rectilinear Lens, and a Thornton and Pickard Shutter. However I had not yet decided on a routine manner of working which I was desirous of doing; and I began to feel a strong desire to discard all the chemicals and other materials, the special properties of which I had not properly got hold of, as they only burdened my photographic almirah and caused confusion. By this time I had pretty well settled to the ammonia and pyro. developer, but having experienced an unfortunate accident with ammonia, I determined to discard this agent as dangerous in this hot climate. At this time our former Honorary Secretary came to my assistance and gave me his developing formula, and showed me a method of working. The principle seems to me to be perfect, and I will give you my method of routine. The plate is first flooded with the pyro. and sulphite of soda solution with bromide, and, after the lapse of a couple of minutes or so, this is poured back into the developing cup to mix with the carbonate of soda solution which has been meantime dropped into it. The first appearance of the picture is now anxiously looked for, more soda solution being gradually added as required until development is completed.

Since using this formula and carrying out this method I have had better negatives of a fairly equal density, and ones which print easily and are suitable for enlarging. Formerly, although sometimes I got a good negative, they were too often too dense, requiring long exposure for printing and quite unsuited for Bromide printing or enlarging. I use the pyro. dry, and keep the soda sulphite, the carbonate, and the bromide in solution. I estimate the density of the development by the picture showing through, on the back, and of the quality of the negative by the manner in which the picture is delineated on the film, after removing from the fixing bath; this is sometimes most perfect and the negative proportionally good. I use the Ilford "ordinary" plate which I find has the advantage of being very readily procurable, and I have found it to stand viscissitudes of climate remarkably well. It is also sufficiently rapid for work, up to one-eightieth sec. exposure, and at that I have taken some very successful photographs, using the developer described above.

With regard to printing paper, I use the P. O. P. After having tried a variety, I am satisfied that very many indifferent prints are due more to indifferent negatives rather than to any fault in the paper to which we are inclined to lay the blame. At first I often failed in toning, although I carried out the instructions given. I thought perhaps the fault might be in the sulpho-cyanide. I therefore tried other toning solutions, with indifferent success. I have now gone back to the sulpho-cyanide toning bath and have unconsciously dropped into this method. Perhaps any previous ill-success was due to my having endeavoured to work the sulpho-cyanide, by weighing it out as required, whereas I now keep it in solution, at a strength of 1 to 5. At first I kept my prints till I had at least one dozen ready to tone, but I now make four ounces of toning solution which I find is sufficient to tone four half-plate prints and possibly a fifth; I throw this away and make fresh as required.

I have practised Bromide printing and with fair success, since my negatives have been better, the difficulties of exposure can only be got over by experience, but when that is grasped it is a most fascinating printing process. I use the Ferrous Oxalate Developer, made according to the recognised formula, and I find from experience that for half-plate prints we may estimate the quantity of developing solution required at one ounce for each print. I would here point out an accident by which some prints have been spoiled, and that is not evenly sliding the prints into the fixing solution, causing marks thereby.

It will be seen that my photography is on a very small scale, and I have endeavoured to reduce it to the narrow limits of routine, and my stock in trade consists of —

Half-plate Camera with Single and R. R. Lenses.

Thornton Pickard Shutter.

Ilford Ordinary Plates.

Ilford's P. O. P.

Eastman's Bromide Paper and the requisite chemicals—

Pyro., Sulphite of Soda, Bromide of Potassium, Carbonate of Soda, Alum, Hypo., Sulpho-Cyanide of Ammonium, Chloride of Gold, Oxalate of Potash, Sulphate of Iron and Citric Acid.

I hope, when I have the opportunity, to be able to enlarge from some of my best negatives, and when I can accomplish this well, I think I shall rest satisfied. It may be said that I am not ambitious, but there is very little room for ambition in these things when one's time is pretty well occupied by other matters.

Had I commenced under instruction, or could I have started at the point where I find myself now, I should have perhaps spent less money, but I should not have had the pleasure and interest in working out points which were to me problems. In concluding these notes, I must acknowledge the assistance I have received from the Madras Society, which has not only given me help in my work, but has helped in keeping up the interest in the subject which at times quite unconsciously seemed to fail.

I hope now that others will publish in your journal some of their personal experiences, for I am sure we should all benefit by comparing

NOTES.

Kirkee,

25th January 1896.

To the Editors of the Journal.

Finders.

Dear Sirs,—Can any of your readers kindly inform me, through your Journal, what the best form of "finder" is, suitable for a 5″ x 4″ Eclipse Camera; and whether it can be purchased in Madras?

Anantapur, C. M.

3rd February 1896.

[The "Brilliant" finder, as its name implies, enables one to see the view brilliantly in a strong light or in a badly lit room. It shows a reversed image.—*Eds.*]

The Editors,

Journal of the Amateur Photographic Society of Madras.

Harsh Negatives.

Sirs,—I am sending by parcel post two negatives (groups of three girls) addressed to the Honorary Secretary and shall be glad to hear from you whether anything can be done to reduce their harshness. I have read with interest the paper by Mr. Burton in your January number of the Journal on this subject, and should have tried the effect of Farmer's Reducer, or Perchloride of Iron and Hypo, had either been obtainable in these parts. Before sending for a Reducer I shall be glad to have your opinion as to which kind will best suit my case; also I am anxious to know the cause of my failure so as to avoid mistakes in future. The pictures were taken with an ordinary landscape lens, at noon, on a bright sunny day; one of them was exposed 2 seconds, the other 4 seconds. I cannot tell which is which. The plates are W. and W's Instant. developed with Pyrogallol. Is the fault simply over-development?

Yours faithfully,

J. U.

Coonoor,

3rd February 1896.

[Printing in direct sunlight with tissue paper over the negative may soften the harshness of the print. Reduction of the excessive density can be effected by any of the common reducers. All re-

ducers are apt to act more vigorously on the shadows and half-tones —at least their effect is most marked on those parts, and so the operation must be done watchfully and with care. Control over the reducer is best preserved by working with it well diluted. We always prefer Farmer's reducer which consists of a mixture of ferricyanide of potassium (red prussiate of potash) and hyposulphite of soda solution. The ordinary hypo. 1 to 5 is diluted with an equal volume of water, enough being taken in a dish to completely cover the plate when laid in it. Two or three small crystals of the red prussiate are dropped into the diluted hypo. and stirred until they dissolve and the solution is of a pale canary yellow color. The negative, after the film has been slightly softened by soaking in water, is placed in the solution until the desired result is obtained. Reduction commences at once and will go on slowly, unless the solution is too strong, in which case dilute it with water. When the deepest shadows commence to clear, the negative should be removed and thoroughly washed in water. By using a slightly stronger solution on cotton wool over the densest parts, while the plate is in the reducer, a better result will follow; but the operation is one which requires some skill. The retouching medium on one of the negatives should first be removed if you wish to reduce it.

As regards cause of failure: had the exposure been fuller and had the developer been weaker in pyro., a much softer negative would have been the result. In sending information regarding the exposure, please always say what stop was used. A note of the period of exposure, without information as to size of aperture through which light was admitted to the plate, is as indefinite as saying that the cap was taken off and put on again! The fault of both negatives does not lie in over-development but in under-exposure.

In this connection, you will find some valuable information in a paper entitled "Harmonising harsh negatives" published on page 25 of the last volume of this Journal.—*Eds.*]

THE EDITORS OF THE JOURNAL.

Spots on Prints.

DEAR SIR,—I send two unfixed prints to show certain marks that are on my negatives. These two are about the worst, and some only show one or two small blotches. Nothing was visible on the plates when I put them in the slides, but they show up as white opaque marks when the developer begins to work. I shall be glad to know what this is due to.

HUNSUR, J. S.

3rd February 1896.

[The marks, as far as we can judge from the prints, are undoubtedly due to damp. They are every one of them stellate, and resemble the marks resulting from damp in the film; and if the plate is very carefully examined before exposure, the larger damp spots at any rate will probably be visible.—*Eds.*]

EXTRACTS.

The Photographic Discovery.

Professor Silvanus P. Thompson, writing in the *Saturday Review* on this subject, after dealing with the researches into the invisible rays of heat and light, says: "Now Rontgen has put a crowning touch to these facts by the remarkable discovery which has excited the Viennese press. He has succeeded in finding a means of photographing an object of metal, though it may be all the while shut up in a wooden case. A special source of light (a Crookes's tube stimulated by electric discharges) is placed behind, and the camera, or rather the sensitive sheet, in front, of the wooden box. These special radiations pass through the box more readily than if it were of glass, but cast a photographic shadow of whatever metal object may be in the interior. This is scarcely photography, in the ordinary sense of the word. It is rather the photographic registration of shadows. Glass lenses cannot be used to concentrate these rays: hence they cannot be employed to form images. If the sheet of sensitised paper is in turn shut up in a wooden box, and an object of metal is placed in front, its shadow, as cast by the radiations from the Crookes tube, is imprinted on the paper. No 'exposure' (as the photographer understands it) is necessary. Indeed, the sheet of paper might be shut up in one box, and the metallic object in another, and yet the photograph might be taken. In the same way Professor Röntgen is able to photograph a man's skeleton through the skin, flesh, and clothes, which for this purpose are photographically transparent, while the bones are opaque like the metals. . . . Whatever, then, the new kind of light may be that produces these effects, it differs both from ordinary light and from the ordinary photographic rays, as well as from the visible kathodic rays discovered by Crookes: for the latter pass through metal, but are stopped by non-metallic substances. Professor Boltzmann, whose authority in physical optics stands undisputed, regards the discovery as of the utmost importance from the scientific standpoint; for it reveals the existence of phenomena not explained in any of the accepted theories of light or of electricity. For the multitude the discovery is no less wonderful; it adds one more to the marvels of science. To photograph in total darkness seems inexplicable; but that we should be able to photograph through walls of wood, or through solid and opaque bodies, is little short of a miracle. We shall now be able to realise Dickens's fancy when he made Scrooge perceive through Marley's body the two brass buttons on the back of his coat. We shall now be able to discover photographically the position of a bullet in a man's body. Even stone walls will not a prison make to the revelations of the camera."

Naturally enough the matter has created considerable stir, and despite the air of authority with which the discovery has been heralded or announced, there is some credulity expressed in respect to it. Professor Klupathy, of the Physical Institute of Pesth, has been experimenting, and has to a considerable extent corroborated Professor Rontgen's original work. Professor Klupathy has varied his experiments somewhat, and has done so upon larger portions of the body than the hands. One metal, however, has been found to form an exception to the rule, a metal which in other respects offers many peculiarities—aluminium. Professor Röntgen has sent rays of the new chemical light through aluminium plates of one and a half centimetres in thickness, and they went as clean through as if the substance had been wood. The same was the case with two sets of books, including many volumes. These he placed between the Crookes tube and an ordinary compass; behind them was the wooden case with the dry plate, and the result was, so it is said, but of this there may be misgivings, as complete a photograph of the compass as possible. It is, perhaps, not strictly a photograph in the ordinary sense, or as the term is generally applied and is commonly understood, because no lenses are used; it is not a negative but a positive plate that is obtained. Hence some people are inclined to call such a figure simply the shade of the object, and, we presume, more of the character of a silhouette. It has not, however, been found possible to get such a shade fixed, which is a point not readily to be understood.

Captain Abney does not attach so much importance to it as has been done in some quarters. No new principle is, he says, involved in the discovery, which is very interesting, he thinks. He thinks that what Röntgen has discovered is analogous, at the other end of the spectrum, to the heat rays, by which substances opaque to rays of ordinary light may be penetrated. The professor appears to have proven more thoroughly than was known before certain principles by which it was known, that certain substances which are usually considered opaque are, under circumstances suitable, penetrable. Captain Abney thinks that it is not likely to lead to any developments of a startling character in photography.

The *Pester Loyd* states that though it does not wish to diminish the credit of Professor Röntgen as the discoverer of the means of photographing invisible objects by rays of light, which penetrate even wood, it must say that in 1894 a Hungarian professor, Philip Lenard, who completed his studies in Germany, succeeded in photographing objects in this way. He published an illustrated account of his experiments in Poggendorf's 'Annals of the physical sciences and chemistry.' Professor Lenard is at present at the University of Stuttgart.

According to the Berlin Correspondent of *The Daily News*, on Sunday afternoon the Emperor received Professor Rontgen, of Wurzburg, whose discovery of a new photographic medium has made so great a sensation in German and Austrian scientific circles.

Owing to the important political events of the last few weeks, that discovery has attracted less attention among the public than it deserved. Professor Röntgen photographs objects which are enclosed in wooden boxes; he photographs the bony skeleton without the skin and flesh. It sounds like a dream *à la* Jules Verne, but if, seventy years ago, it had been said that it would be possible for a person in Berlin to speak to another in Vienna, he would have been taken for a madman. Professor Röntgen has discovered that the light given from an electric discharge from one of Crookes's tubes, the rays of which are scarcely visible to the human eye, penetrates wood, books, skin, muscle, and even thin aluminium plates. By placing this light-producing apparatus before the object to be photographed, or rather the object containing that to be photographed, and behind the latter a photographic plate, the rays cast the figure of the so-contained object on to the plate. In this way Professor Röntgen took the photograph of a coin which was inside a box. He also photographed a human hand, showing, however, only the skeleton, the flesh not appearing on the plate.

On reading in the newspapers of this startling discovery, the Emperor invited Professor Röntgen to Potsdam to show his experiments. There were present at the lecture given by the discoverer at the Schloss, the Dowager Empress Frederick and the Empress, besides the Emperor. Professor Röntgen, who calls these rays "X rays," began his lecture by explaining the use of the Geissler and Crookes tubes, and then passed on to his discovery, which he demonstrated by several experiments. He photographed objects which were placed behind panels of wood, and in wooden and cardboared boxes, the rays which photographed the objects passing through the wood or cardboard. He limited himself to inanimate things, not "taking" any parts of the human frame. The distinguished audience followed the lecture and the experiments with the greatest attention, and especially one showing the rays passing in a straight line through water without refraction. This caused the greatest astonishment, and the Emperor, who evinced a specially lively interest in the experiments, invited Professor Röntgen to supper, and remained with him and other guests conversing about the invention till midnight, when he personally handed Professor Röntgen the Crown Order, Second Class.

Without wishing to detract from Professor Röntgen's merits, it is pointed out in scientific circles that the observations made by Geissler and Crookes prepared the way for him. The X rays are not refracted even by a prism, but remain rectilineal. The whole theory of the discovery is still completely in the dark, and for this reason Herr Röntgen calls them X rays. At any rate, his invention is epocheal for the physicists, who will have to occupy themselves further with it. It confirms again Hamlet's word. "There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy."

In regard to the "new photography," as someone has been calling Professor Röntg n's experiments with Crookes's vacuum tubes, the novelty, says the *Pall Mall Gazette*, is rather over-rated. It must be two or three years since the discovery was made that certa n rays of the spectrum would penerate opaque substances, and that given a suitable medium metal objects could be photographed behind wooden screen, or bones inside animal flesh. Professor Röntgen, however, seems to have put the discovery on a more practical basis.

The same journal more recently remarks, in that jocose vein which characterises it: "we have seen the new photography, of which such wondrous things are spoken; and in its performance it is more like our early notions of hell than anything we ever hoped to realise. An ingenious gentleman, Mr. Camphell Swinton, who is in the habit of exhibiting high tension experiments before the learned societies, invited us to witness the latest craze, and we did so unsuspectingly. In a room surrounded with ominous-looking boxes and buzzing coils, he directed our attention to what we were informed was a dry plate enclosed in an ordinary wooden slide. On top of the slide were ranged coins, keys, rings of ebonite, aluminium ornaments and such like. Above was a vacuum tube connected by wires. When a key was pressed the whole thing blazed into coruscations of purple light, with a deafening roar of demoniac noises. We were invited to touch a wire, and let 4in. sparks blaze from all our fingers, which we did, not hoping to live. We grasped a knob, and lit a gas fire with our boots. After five minutes the plate was developed, and there were the coins, etc., photographed through the slide, many of the objects being themselves transparent. Then our hand was photographed in skeleton. On the whole we do not like the new photography. If we are to be physically recorded we prefer the Gallinian finger-prints. It is less alarming."—*Photography.*

Instantaneous Work.

By Thos. Rogers.

For instantaneous photography, it is not necessary to use the most rapid plates in the market. Working in good light, and with a moderately large aperture, the ordinary are rapid enough for exposures up to one-fiftieth part of a second, and are much easier to develop than the very rapid plates.

In photographing moving objects, it must be remembered that the motion, as affecting the image on the plate, depends on—first, the speed at which the object is moving; second, the distance of the object from the lens; and third, the focal length of the lens.

In order to secure a sharp image on the sensitive plate, the distance travelled by the image of the moving object to be photographed on the plate during exposure must not exceed the $\frac{1}{250}$ th part of an inch.

Here is a table showing the rapidity with which objects move:

A man walking at the rate of 4 miles an hour moves	55in.	per sec.
A man running „ „ 12 „ „ „	172in.	„
A steamer going 17 knots an hour ... „	350in.	„
A horse galloping ... ... „	560in.	„

Now, for a given exposure, to find the distance the object should be from the lens, divide the number of inches the object moves per second by the exposure to be given, then the $\frac{1}{250}$th part of an inch to be multiplied by the quotient, and again multiplied by the focus of lens in inches. The results will give the nearest distance the object should be in order to obtain a sharp photograph. For example, if we take a steamer travelling seventeen knots an hour, we find by the above table that it moves three hundred and fifty inches in a second, then let one-fiftieth part of a second be the exposure necessary for the plate we are using, and lens five inches focus.

Exposure $\frac{1}{50}$ of 350 inches travelled per second = 7

Part of an inch $\frac{1}{250}$ x 7 x 5 (focus of lens) = 8,750 inches, or 243 yards, the steamer should be away from the camera.

The above is worked out for objects passing right across the field of the lens; if the object is coming towards the camera then we can get nearer to that object, or, rather, wait until the object is nearer to the camera.—*Photography.*

On a simple method of projecting stereoscopic pictures on the screen by means of two ordinary lanterns.

[*A Paper read at the London and Provincial Photographic Association by* T. E. Freshwater, F.R.P.S.]

I think we can fairly claim that my system of getting a stereoscopic effect on the screen has not been shown to an audience before in this country. When we first saw the anaglyphs, the invention of Mr. Ducos du Hauron, we thought that something of the sort might be applied to the lantern, so set to work for that end. I tried a great many different ways, dyed my films in all sorts of colours, red, blue, yellow, used all the various coloured gelatines that I could get, had heaps of carbon tissue made in various ways to try and get the right colours, but with poor success, as you will see. The great difficulty was to get the proper colour value in the different pigments that we used, and in the spectacles through which it is necessary to look at the picture. If these pictures could be produced in their proper colours in this way, they would have a much better effect than can be got with a black and white picture coloured by means of coloured glasses. Gelatines are of no use, you cannot get them of the proper colour value; and if you could, they will not stand the heat of the lantern, for in a few seconds they blister up and burn, so I had to fall back to the coloured glass,. Now, to show this system of stereoscopic projection, as I have said, it is necessary to have two lanterns, either a pair side by side or a biunial. In the one lantern you place one half of a stereoscopic picture, and in the other lantern the other half; now, behind one picture you place a red glass and behind the other picture a green glass. Now, when these two pictures are projected together on the screen, they are made to cover one another, so that we see an indistinct mass of colour caused by the two slides occupying the same place on the screen. If the coloured glasses are of the right colour value, and we cover up the green glass in the left eye, we shall see only one picture, and that all red, though there are still two pictures on the screen; now cover up the red glass in the right eye and look through the green glass of the left eye and we shall see only one picture, and

that will be green, though the red one is still there; now look at the picture through both eyes of the coloured spectacles, with a red glass in the right eye and a green glass in the left eye, and we shall see that the two pictures that have been projected by the two lanterns on to the screen are made to blend, not only into one another, but to stand out in bold stereoscopic relief.

Let us consider for a moment the cause of this. We have two pictures of the same subject taken with a pair of lenses at two or more inches apart, so that one lens takes one picture at one angle, and the other lens at another angle; now, if we look at the picture so taken through an ordinary stereoscope with prisms, we get one impression, and so see the object photographed as we do in nature; just the same with the system that I shall presently show you. If you understand the principle on which the new stereoscopic projection is shown, you will more easily grasp the cause of the effect. As I have said before, we have two similar pictures of the same subject, one taken to the left and the other to the right, these two pictures being covered with coloured glasses, one red, the other green—we want to see each separately. In nature we see more to the left with the left eye, and more to the right with the right eye—we want to see these two pictures as one. To do this, we look at the left picture through a glass of the same colour as it is covered by, and the right picture by a coloured glass the same colour as it is covered by. So we get two pictures conveyed to the eyes separately at the same time, with the result as in nature, everything standing out in bold relief; so much so, that in the special stereoscopic pictures that I have prepared to show you this evening, the plants and other things stand out in such bold relief that one feels as if you could put your hand through the leaves and pick the flowers. To get the best effect, the subject should be large, that is to say, when shown on the screen, as near life size as possible. I will show you some interiors—they are so real that you feel as if you must get up and walk down the long corridor, and sit on one of the seats; I will show you a party of travellers crossing a glacier, with their ladders and ropes—you will see how real it is. In looking at this picture in the flat, you get no idea of the difficult task these men have in hand. I have also two or three copies from an old set of diagrams, published many years ago, for showing objects in true perspective with stereoscopic effect, notably one of a cross; if you look at it from one side of the room, you will see the front bar appear as if it stood right out and you could take hold of it with the hand; walk across to the other side of the room and the bar will appear to follow you—now this is very curious. Another example; a figure of myself seated in a chair. If this is viewed at an angle, you seem as if you can see almost round the figure. The adaptation of this system has been brought within reach of any exhibitor by Messrs. Newton & Co., of Fleet Street, and put upon the market at such a price that I hope we shall soon see it introduced into every public lecture and entertainment. A few pairs of pictures thrown on the screen will give a far better idea of a place than all the description possible, but I will not occupy any more of your time, but at once proceed with the exhibition.—*Photography.*

Printing in Platinum.

By "E. A. R."

In my last article I brought the platinum process up to the point at which the paper has been dried and stored for use; I now propose to continue the operations to the finished print.

From the manufacture of the paper until the print is developed it must be rigorously protected from damp air or moisture of any kind whatever. For this purpose the paper is stored in tins having lids at both ends, one to contain the moisture-absorbing substance, which is contained in the lid and prevented from falling into the tin by a grating placed across the inside. The absorbent substance is, most conveniently, short fibred asbestos, soaked in a very strong solution of calcium chloride, made into small nodules, and dried over a fire, on a metal plate. This is wrapped in fine muslin and placed between grating and lid of tin, the joint of which is covered by a broad india-rubber band; a band is also placed over the joint of the other lid.

The calcium chloride and asbestos can, when it has become moderately wet from absorbing moisture from the air of the tin, be dried over a fire, on a metal plate, and replaced, great care being taken to prevent any small particles from falling among the paper and causing white spots; this is the function of the muslin.

I have dwelt at rather a great length on above, but it being so important I hope I may be excused. The paper, on being cut up for use, should be curled so that the sensitised side is outermost; it will then, after a time, retain this curvature, rendering it more convenient to handle.

The printing is done in the usual way. The special precautions to be taken are—that the pads at back of frame are perfectly dry, and that a sheet of vulcanised india-rubber be placed directly behind the paper. If the rubber is new it should be well washed to remove the free sulphur, which is generally found on the surface; this remark applies more to the white varieties. The "filling-in" should be done in a light yellow light (gas-light), as platinotype paper is very sensitive to light, far more than ordinary silver paper.

The finest results are produced from negatives of good density and gradation, clean and free from stain or fog; but by careful development a fairly good print can be obtained from an indifferent negative.

The printing is continued until the details just begin to show in the high lights, the image being generally faint, and, compared with the rest of the surface, of a violet hue. The print shews up more in damp weather, and, therefore, printing must apparently be taken deeper. In negatives having very great contrasts, the clear glass of negative, corresponding to the shadows of print, allows a large amount of light to pass, and over-exposes the paper beneath, producing reversal, or, as it is generally known, "solarisation"; this produces a granularity in the blacks, and is of an orange colour in the undeveloped print. The printing can be done by the actinometer, platinotype paper taking about one-third the exposure of ordinary silver paper. The prints should be examined quickly, to prevent fogging of paper and the absorption of moisture.

When printed, the prints are returned to a tin, like that used for storing the unexposed paper, the same precautions being observed as to moisture, being curled face outwards, the long way of the print.

The prints are developed on a bath composed of neutral potassium oxalate, of the following strength:—

Oxalate of potassium ...	16 ozs.
Water	60 „

This may be used for the paper coated as directed in my last article, but the Platinotype Co. supply special developing salts, for which special properties are claimed.

The above solution is used at a temperature not below 70° F. Should a print be slightly under-exposed, it may be improved by heating developer; hard negatives require a hotter, and weak a colder, solution. Development should take place in a subdued light or gas-light. The solution is most conveniently contained in an enamelled iron dish, about 15 in. x 12 in., and 2½ in. deep, for 12 x 10 prints, care being taken no iron is exposed, this being detrimental to prints. A thermometer should be kept in the bath, and the whole placed on a small gas stove.

The prints are either floated on the surface or immersed in the solution; if floated, the print is taken face downwards between the finger and thumb of each hand—being sure the fingers are quite dry—the right hand end lowered on solution and the print drawn across, gradually lowering print with left hand. The print should then be raised to ascertain if free from air bubbles on the surface, if not they can be displaced by rapidly drawing print over surface of liquid; if they are not removed the spots occupied by them will be left white. The print is then placed in a bath made as follows:—

Fixing bath—

Hydrochloric acid	1 oz.
Water	60 ozs.

They are left in this for about fifteen minutes, and then transferred to another like bath for same time, and again into another; the last bath may be used again for the first bath of the next batch. The prints are then washed in three changes of water, extending over about half-an-hour, according to number of prints, and then dried in the usual way. They may be mounted with cornflour paste, made of a teaspoon of cornflour to the teacup of water, boiled and allowed to cool, the surface skin being taken off; if required to keep, a little carbolic acid or thymol should be added.

A special paper is supplied for cold development, and also for sepia tones on application of a special solution to the developer, all of which can be obtained commercially. Sepia tones can also be obtained by adding a little bichloride of mercury to the ordinary developer and using the ordinary paper.

The prints appear more brilliant and slightly lighter when wet, and so allowance must be made in developing. The development can be stopped at any instant by placing the print in fixing bath.

The acid must not be allowed to get on the undeveloped prints, or it will then entirely destroy the image, and produce white markings. The developing solution can be used over and over again until it becomes green, and deposits green crystals.

Directly the prints are in the acid bath the operations may take place in full daylight, and the last acid bath should show no color when a depth of two inches be viewed in daylight. If there should be a slight yellow tint, another bath should be given, it being very important that all the iron salt be removed from the paper. For large prints a long trough is used, 26 x 6 x 5 inches; the print is drawn backwards and forwards through this, by pulling it beneath a glass rod immersed in the solution.—*The Photogram.*

Pinhole Work.

The writer of the London letter of the *Journal of the Photographic Society of India* says: We confess, with mingled amusement and vexation, to having exemplified in our proper person more than once that curious blindness to obvious facts, from which scientific men are said to suffer so frequently, but which seldom overcomes ordinary mortals like ourselves. Both in actual fact and in verbal description we have elaborated in several cases a method of making and fixing a pinhole front to an ordinary camera. A very troublesome and fidgety job it has been, and a great bar in the way of any frequent pinhole practice; especially as the whole arrangement must be unshipped each time the camera is required for an ordinary purpose, and readjusted before it can be used again. The obvious, the simple, and the better way to attain the result simply hit us in the eye a day or two ago when using a very small stop. It is, of course, to put the pinhole puncture into a diaphragm made to slip in to the ordinary stopslot of the lensmount (which is presumed to be fitted with Waterhouse stops). By unscrewing the lenses themselves the mount becomes a perfect holder for the pinhole; and readjustment in either direction is a matter of a few moments only. *Now* we trust that many operators will take the small trouble necessary to secure a few punctured diaphragms, and so accord this branch of photography a fairer share of the patronage it so well deserves. One caution we find constantly in need of reiteration. The diaphragm at the point of puncture should have no appreciable thickness. The diameter of the pinhole is, of course, only a thirtieth of an inch, or thereabouts; and anything thicker than thin note paper just at the point of the perforation would form a tubular opening, and be fatal to clearness and brightness.

Metol-hauff for Bromide Work.

Mr. Jules Fuerst, F.R.P.S., writes: Of all modern developers this seems to have been found the most useful, on account of its adaptation in various ways, which enables the developer not only to give great vigour, but also softness. At the present time of the year, when so much bromide work is being done for contact printing and enlargements, metol will be found extremely convenient. Concentrated stock solutions can conveniently be made in the following manner—Solution A: Metabisulphite of potash 1 ounce, Metol 150 grains, Water ten ounces. Solution B: Cabonate of potash 3 ounces, Water 12 ounces. For use, take one part of A (·75), threequarter parts of B, and from ten to twenty parts water. Latterly it has been recommended to increase the quantity of sulphite of sodium in the metol developer with the object of bringing out more details, and thus avoiding a tendency to fog, as would be the case when increasing the quantity of carbonate of potash. The simplest way of thus using the sulphite is to replace the solution B by a solution C as follows: Solution C: Carbonate of potash $3\frac{1}{4}$ ounces, Sulphite of sodium (cryst.) $3\frac{1}{4}$ ounces, Water 17 ounces. For use, mix one part of A, one part of B, and from ten to twenty parts of water. Metol has in a greater degree than amidol, the peculiarity of being restrainable by bromide of potassium solution, and the addition of a few drops to the developer will clear any surface fog which might become apparent. If, however, instead of adding bromide solution a few drops of a ten per cent. hypo solution are added to the developer, this will already restrain development. Metol offers the great advantage that it is not readily oxidised by air, and naturally a considerable number of enlargements may be made one after the other by adding from time to time to the old solution a small quantity of fresh developer.—*Photography.*

On the Development of Lantern Slides.

BY DUNCAN MOORE.

THE time is rapidly approaching when the OPTICAL MAGIC LANTERN will be taken from its shelf to become a source of amusement and instruction to both the younger as well as those of more mature years. Bad light and wintry weather will put a stop to the greater part of outdoor work, and afford enthusiasts an opportunity for the home occupation in making lantern slides from his choicest negatives.

That there is a vast difference in the quality of lantern slides, no one will deny. Even when made from excellent negatives some will be much better than others. As in printing of other kinds, a good negative can be made to give either a good or bad result, according to the intelligence with which the work is performed.

As there are prints *and* prints, so there are transparencies *and* transparencies. There is the flat slide, without a vestige of sparkle or brilliancy; poor weak slides, with no light and shade to speak of; slides that are masses, black with intense light; slides that look almost as if made of sand; and the rich, soft, smooth, brilliant slide that is a pleasure to look at and elicits applause directly it is thrown on the screen; and yet one and all of these may have been made from exceedingly good negatives.

It goes without saying, that the best negative will make the best slide, other things being equal. At the same time, what may be best for a lantern transparency may not be the best for ordinary printing. In fact, a rather thin negative, full of detail, that really will not make an exceptionally good print on paper, is the kind calculated to make the very best quality of lantern slides; it should be thin and full of detail. The brilliancy is added by judicious exposure and in the development of the transparency.

Unless the original negative possesses printable detail, it is useless expecting to get it on the slide. A dense negative is very unsuitable, for even if detail is there it will be lost in the copying. The kind of developer has a good deal of influence on the matter. Hydrokinone, one perhaps of the most generally used, is not good for this work; the fineness of the resulting image will be much inferior to one developed with carbonate of soda and pyrogallic acid. Ferrous oxalate is another unsuitable developer, although both give excellent negatives for ordinary printing. Ferrous oxalate, especially, produces granular coarse positives.

The popularity of quinol or hydrokinone is on account of its beautifully clear shadows, and until the slides are shown in the lantern they appear all they should be. On the screen a certain harshness becomes at once apparent, and if followed or preceded by one developed by a more suitable developer, the fault is unmistakably evident.

The choice of plates for lantern slides should be regulated by the fineness of the image they will produce. Generally, slow plates are preferable to rapid ones, because the bromide of silicon is in a finer state of division. Most of the specially made lantern plates are very slow, judging from the standard of dry plates for other purposes, excepting those for photo-mechanical use.

Plates that when moistened show a gas flame seen through them of a yellowish grey are better than if the light transmitted was of a bluish grey. The yellow and red colours seem to be closely associated with silver bromide in a state of fine division, and the blue colour when it is in a coarse form. It does not much matter how the original negative has been developed—the granularity is not transmitted to the copy. This freedom from it is only so important on the positive. The image in all cases should bear examination with a tolerably strong magnifier without showing grain.

The time of exposure has an important influence on the colour, and also the fineness of the image. If the exposure has been too brief, and the development at all forced, the quality of the image is very much deteriorated. But with a fairly long exposure and a somewhat restrained development, we get a quality and richness of result very charming to see. There are two methods for making transparencies—one by contact, and the other by the aid of the camera. By contact, the slide is produced of the same size as the negative; by the camera the size of the negative is of no importance. We can reduce our whole-plate or 12 by 10 to lantern size with equal facility.

Once ascertained, there will be no difficulty in giving a suitable exposure to negatives of the same class, and with practice the examination of the negative will at once indicate the exposure required. It should be seen that the negative and transparency plate are both flat and no irregularities on the surface. A very small knot in the glass under the film will very likely fracture the negative when pressed in the frame. By carefully looking over the surfaces of both negative and positive plate, any unevenness will be detected. A defective negative may be printed for a long time in the ordinary way without coming to grief, but when pressed hard against another unyielding surface a fracture soon occurs. Small splinters of wood from the frame, or other hard trifles, getting between the two glasses, generally results in disaster. The glass being curved, or of unequal thickness, considerable pressure has to be applied to force the films into close contact; a trifle between them, that might not cause damage with less pressure, with the increased strain would almost certainly do so.

A small screen held in the hand, a piece of cardboard, or something of the kind, is useful to shade parts of the negative during exposure, whilst the light continues to act on some denser portions. Much better results may often be had by this partial shading from many negatives. The screen must be kept gently moving during the time, and at not more than a few inches in front of the negative. A very thin negative is best copied by using a much weaker light than usual for negatives of ordinary density.

One very important precaution in copying by contact is the masking of the edges of the glass, either by an opaque paper mask, covering about a quarter of an inch of the negative all round, or by painting the edges and a quarter of an inch of the surface with black varnish. More transparencies are spoilt by neglecting this precaution than by almost any other. The light striking on the edges of the plate will fog nearly a third of the surface, and the brighter and nearer the light the more pronounced the effect. With films, of course, there is little danger of fogging from this cause, or breakage by pressure.

If the camera is used to make the transparencies, the size of the negative is immaterial. A lens of very short focus, such as wide angle lenses are, should not be used; one of ordinary angles, such as the rapid rectilinear, is best for the purpose, and its focus about the same as the length of the negative being copied. No light should enter the camera, except that forming the image; a mask being used to cut all the rest off, even if it is only portion of a large negative to be reproduced. This considerably brightens the effect. The focussing should be effected by aid of a magnifier, unless the operator is possessed of very acute vision. Even then I think magnification of the image is an advantage.

For my own part, I prefer soda-pyro developers, well restrained, and after fixing, immerse in a weak hydrochloric acid bath, of a strength of about one in eighty; the use of too strong a bath is apt to loosen the film from the plate. The colour can be altered by using protosulphate of iron in the hyposulphate fixing bath, and by clearing with citric acid and alum.

Before binding up the slides they can be labelled by writing on them with chrome yellow moist water colour thinned down, so as to run from a pan.—*The Optical Magic Lantern Journal and Photographic Enlarger.*

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